Deseret Chemical Depot
Attachment 5
Closure Plan

Closure Plan

1.0 Closure Performance Standard [R315-3-2.5(b)(13), R315-8-7; 40 Code of Federal Regulations (CFR) § 264 Subpart G]

1.1 The Deseret Chemical Depot (DCD) stores chemical munitions for U.S. Department of Defense (DOD) agencies and is managed by the Chemical Materials Agency (CMA) of the U.S. Army. Hazardous wastes generated through normal operations are stored in the DCD permitted hazardous waste management units (HWMUs). HWMUs include:

1.1.1 Igloos once storing M55 rockets;
1.1.2 Igloos managing other hazardous waste;
1.1.3 Building 4107 storing hazardous wastes with free liquids in containers and wastes without free liquids in containers and waste piles;
1.1.4 Building 4553 vault permitted for storing containerized hazardous wastes with and without free liquids;
1.1.5 Building 4536 storing hazardous wastes without free liquids in containers;
1.1.6 Open Burning/Open Detonation (OB/OD) Conex storing waste propellants and explosives.

1.2 A full description of the operational hazardous waste management activities associated with these units is provided in Attachments 12 (Container Management), and 13 (Waste Piles) of this Permit.

1.3.1 Upon completion of operational hazardous waste management activities, the DCD hazardous waste management units will be closed in accordance with the requirements of Utah Hazardous Waste Rule R315-8-7 and 40 CFR § 264 Subpart G. Development of a detailed Closure Plan that identifies the steps necessary to achieve closure of DCD HWMUs will be performed in accordance with applicable federal and state regulations. Negotiation of cleanup standards for clean closure will include determination of hazardous waste or hazardous constituents to be investigated and agreement on the Waste Analysis Plan (WAP) to be used for investigation and confirmation activities in DCD facilities. These actions will likely occur as part of a general updating and finalization of individual unit closure plans.

1.4 Facility HWMUs will be closed in a manner that minimizes the need for further maintenance and eliminates, minimizes, or controls the possible hazards to human health and the environment that are associated with post-closure escape of hazardous waste. The present inventory of agent-related wastes at DCD will be incinerated at an onsite disposal facility. The incineration residues and other non-agent-related wastes will be sent to a licensed, offsite treatment, storage, and disposal facility (TSDF). Hazards presented by the wastes and residues will be greatly reduced and the need for further maintenance will be minimized.

1.5 HWMUs managing waste in containers at DCD, including permitted igloos, Buildings 4536 and 4107, the Building 4553 vault, and the OB/OD Conex, will be closed in accordance with the requirements of R315-8-9.9 and other conditions described in the permit. The waste pile located in Building 4107 will be closed in accordance with the requirements of R315-8-12.6 and other conditions described in the permit.

2.0 Partial Closure and Final Closure Activities [R315-3-2.5(b)(13); 40 CFR § 264.112(b)(4) and (5)]

2.1.1 HWMU closure activities at DCD will include the removal of all hazardous waste and hazardous waste residues from the HWMUs. The permitted waste chemical munition storage igloos, Building 4536, the Building 4553 vault, the OB/OD Conex, and the container storage area in Building 4107 are managed in accordance with R315-8-9 and will follow the closure requirements of R315-8-9.9. The waste pile in Building 4107 is managed in accordance with R315-8-12 and will follow the closure requirements of R315-8-12.6. The remaining containers, liners, bases, and soil containing hazardous waste or hazardous waste residues that exceed clean-closure target levels will be decontaminated, treated, or removed, depending upon analytical information and the history of the waste. Prior to initiating closure activities, DCD and the Utah Department of Solid and Hazardous Waste will agree upon closure requirements and contaminants to be addressed in each permitted storage unit.

3.0 Maximum Waste Inventory [R315-8-7; 40 CFR § 264.112(b)(3)]

3.1 The maximum waste inventory for each HWMU is the maximum permitted waste storage capacity for that unit. Maximum waste inventories for the DCD HWMUs are presented in Table 5-1.

Table 5-1: DCD Storage Areas Maximum Waste Inventory

Hazardous Waste Management Unit	Number of units, containers, boxes etc.	Storage Capacity per Unit	Total Maximum Waste Inventory
Area 10 Igloos	57 igloos	384, 55-gallon drums per igloo	1,203,840 gallons
Building 1825	1 Building	5,984 55-gallon drums	329,120 gallons
Building 1835	1 Building	5,984 55-gallon drums	329,120 gallons
Building 4536	1 Building	1,512, 55-gallon drums	83,160 gallons
Building 4553 vault	1 vault	N/A	200 gallons
OB/OD Conex	1 Building	440 gallons explosives	440 gallons explosives
Building 4107 Waste Pile Storage	30 waste piles	250 ft^3/ waste pile	7,500 ft^3 or 278 cubic yards
Building 4107 Container Storage	1 Building	768, 55-gallon drums	42240 gallons

3.2 At final closure, all inventories of hazardous wastes stored in containers or waste piles in the HWMUs listed above will be removed and treated onsite, or transported to a permitted, offsite TSDF for disposal.

4.0 Closure Procedures

4.1 The following information provides a description of the steps needed to remove all hazardous waste or hazardous constituents, as well as to decontaminate or remove contaminated containment system components, equipment, structures, and soils during partial and final closure.

4.2 Unit-Specific Closure Activities [R315-8-7; 40 CFR § 264.112(b)(4) and (5)]

4.2.1 Closure activities for each DCD permitted hazardous waste management unit reflect the specific requirements and considerations appropriate for the types of waste stored in the unit and are discussed below. Hazardous wastes, containers, structures, liquids, and soil must be removed or decontaminated to below specified levels. If the removal or decontamination efforts are unsuccessful or impractical, the storage unit will be subject to applicable post-closure requirements.

4.3 Permitted Storage Igloo Closure Activities

4.3.1 Removal of waste munitions from permitted storage igloos and transport of those wastes to an onsite disposal facility are being performed during the demilitarization process. Three options exist for the treatment and disposal of non-munition, agent-related wastes stored in storage igloos. The decision to utilize a specific option depends on the amount and results of analytical information available for each waste item or container. These options are enumerated below.

4.3.1.1 Wastes that have been air monitored per SOP TT-0000-R-140 and sampled for chemical agent contamination but show no agent vapor concentrations above the 0.2 Chemical Control Limit (CCL) can be treated and disposed of at an offsite TSDF as F999 hazardous wastes. (Wastes found to be not contaminated with agent will still carry the F999 waste code.)

4.3.1.2 Wastes that have been air monitored per SOP TT-0000-R-140-and sampled for chemical agent contamination and are found to contain vapor concentrations of chemical agent at or above the 0.2 CCL must be treated at an onsite disposal facility.

4.3.1.3 Wastes that have not been air monitored and sampled for chemical agent, but are suspected by DCD of being contaminated with chemical agent at or above the 0.2 CCL, must be treated at an onsite disposal facility.

4.4 At the time of closure, DCD will perform a review of the operating records of each permitted storage igloo that has held munitions with energetic components to identify possible sources of explosive or propellant contamination. Since energetic components are contained inside the munition body or warhead, the only way the interior surfaces of an igloo could become contaminated with propellant or explosive contaminants is if a munition body or warhead were broken or ruptured during handling. A major event such as this, requiring implementation of the contingency plan, would be well documented. If the contingency plan for a particular igloo has not been implemented in the past, it is very unlikely that there has been a source of explosive or propellant constituent contamination within the storage igloo.

4.5 The possibility exists for agent contamination of the interior surfaces of permitted igloos storing chemical agent munitions and agent-related waste. Agent contaminated igloos will be decontaminated with agent-specific decontamination solutions. Samples of concrete waste will be analytically evaluated prior to disposal. Concrete containing chemical agent at a level less than the drinking water standard maybe disposed of at a RCRA permitted facility. Concrete containing chemical agent above the drinking water standard must be incinerated.

4.6 All containers of waste with free liquids in permitted storage igloos are stored on drip pans for secondary containment. Drip pans used for secondary containment of wastes with free liquids will be cut up and incinerated at an onsite disposal facility.

4.7 Agent-specific solutions used to decontaminate the drip pans will be collected and either treated at an onsite disposal facility or analyzed for chemical agent. If the concentration of chemical agent is below applicable drinking water standards (0.02 mg/L for nerve agents and 0.2 mg/L for mustards), the solution will be sent to an offsite TSDF for disposal.

4.7.1 Prior to initiation of closure activities, DCD will provide a list of all igloos that have either had vapor or liquid leaks while storing agent. These igloos will be the highest priority for sampling floors and ceilings. Vapor monitoring will not be used to clear porous materials.

4.8 Building 4536

4.8.1 Hazardous wastes without free liquids are stored in Building 4536. Wastes stored in Building 4536 may be incinerated at an onsite disposal facility or transported to an offsite TSDF for disposal.

4.8.2 Some of the wastes stored in Building 4536 are considered acutely hazardous wastes in the State of Utah because they are residues from the treatment, testing, and/or demilitarization of chemical agents (F999). Wastes generated during chemical agent operations stored in Building 4536 will be monitored for chemical agent contamination prior to being placed in storage. At the time of monitoring, no wastes with agent concentrations above the 0.2 CCL will be stored in the building. Some wastes currently stored in Building 4536 exhibit the toxicity characteristic for metals. An analysis for toxicity characteristic metals will be performed to determine if any spills have occurred in Building 4536. Wastes stored in Building 4536 are not expected to produce leachate because only wastes without free liquids are stored in the building. Additionally, the containerized wastes are stored on elevated pallets. A full description of container storage in Building 4536 is provided in Attachment 1 (Waste Analysis Plan).

4.8.3 After the entire inventory of stored hazardous wastes in Building 4536 has been removed, DCD and DSHW will agree on the number of soil samples to be collected and analyzed. Samples will be taken from a 10cm x 10cm square area to a depth of 1cm. Approximately 100 grams of soil will be collected per sample. The samples will be analyzed for the constituents represented by waste codes D004 through D011 and D037, toxicity characteristic for metals.

4.8.4 Action and cleanup levels are included in this attachment. If any of the constituents are present at or above the action levels, the first 2 inches of dirt will be removed from the entire 200 ft. by 50 ft. storage base, treated, and disposed of as a hazardous waste. Samples will be taken and analyzed again to determine the effectiveness of the cleanup.

4.8.5. The loading/unloading area at Building 4536 will be sampled and analyzed as described above to determine the extent of possible soil contamination outside the unit.

4.9 Building 4553 Vault

4.9.1 Building 4553 vault HWMU is not currently in use, but has stored hazardous waste in the past and may do so again if necessary. The vault will be closed in accordance with the requirements of this closure plan.

4.10 Building 4107

4.10.1 Hazardous wastes stored in the waste piles in Building 4107 may include discarded process equipment such as metal and/or cement-filled doors, or other inorganic material. Waste stored in Building 4107 must have no free liquids and no potential to generate leachate during storage. Discarded igloo doors carry the waste code F999. The treatment options selected by DCD for waste pile materials are incineration onsite at an onsite disposal facility or treatment and disposal at an offsite TSDF.

4.10.2 The waste piles are not expected to contaminate the HWMU structure due to implementation of the following waste pile management practices and engineering controls:

4.10.2.1 Free liquids are not introduced into the waste piles;
4.10.2.2 The waste piles are stored in an elevated or curbed area, eliminating the possibility of contact with run-on;
4.10.2.3 Waste piles will be completely enclosed in Building 4107, preventing waste pile exposure to wind and precipitation;
4.10.2.4 The waste piles will not store wastes with detectable agent vapor; and
4.10.2.5 The waste placed in waste piles will be composed of compatible materials and will not generate leachate through decomposition or other reactions.

4.10.3 Building 4107 will also store wastes with free liquids generated from agent-related and non-agent-related hazardous waste in containers. All containers storing waste with free liquids will be stored on drip pans that provide secondary containment. Drip pans used for secondary containment of wastes with free liquids will be cut up and incinerated. Drip pans that are cut up and treated by incineration onsite will be sold as scrap metal, provided that testing to verify the effectiveness of the decontamination procedure has been performed and the results accepted by the Executive Secretary of the Utah Solid and Hazardous Waste Committee

4.10.4 All waste pile materials and containers will be removed from Building 4107 during closure. All residual dusts will be removed for interior of the building. The residual dusts will be either collected and incinerated onsite or sent to an offsite TSDF. At closure, samples will be collected from any spill sites on the floor of building 4107, and analyzed for hazardous constitutes that have been stored in the building.

4.11 OB/OD Conex

4.11.1 The OB/OD Conex is used to store obsolete and discarded conventional munitions, munition components, and propellant awaiting treatment at DCD OB/OD treatment units. Contamination of the interior of the OB/OD Conex by D003 hazardous waste residues is very unlikely because the reactive fillers of munitions and munitions components are solid, and are either encased in the munition casing itself or placed into ammunition boxes or propellant cans prior to storage. All residual dusts will be removed from interior of the OB/OD Conex, and will be collected and properly disposed. At each spill site within the OB/OD Conex shall be sampled and analyzed for the appropriate hazardous constitutes prior to closure. No analysis of the floor sweepings will be performed because of the small volume of sweepings that will be collected (the surface area of the OB/OD Conex storage base is only 48 ft^2). The OB/OD Conex will be considered closed after the inventory in storage has been removed and treated, spill sites evaluated and remediated, and all residual dust has been removed and treated.

4.12 Materials Handling Equipment

4.12.1 Forklifts and trucks used to transport hazardous waste within the facility boundaries will be decontaminated onsite. Materials handling equipment (MHE) is used to handle all wastes in containers. The only way hazardous waste can contact the surface of MHE is via a ruptured container. The MHE used to transport and handle chemical munitions is monitored on a regular basis and is decontaminated as often as required. Contaminated MHE will be cleaned using the appropriate decontamination solutions. Spent decontamination solutions will be managed as F999 hazardous wastes. If the decontamination solution exhibits agent concentration below the applicable drinking water standards, it will be treated and disposed of at an offsite TSDF. Vehicles and containers used to transport chemical munitions shall be sampled and analyzed for the appropriate hazardous constitutes prior to closure.

4.13 Buildings 1825 and 1835

4.13.1 Buildings 1825 and 1835 will store wastes with and without free-liquids that consist of agent-related and non-agent-related hazardous waste in containers. Buildings 1825 and 1835 utilize a storage base design for secondary containment that may be augmented by the use of drip pans for storage of containers with free-liquids. Augmenting the storage base design in this manner will facilitate cleanup in the event of leaking containers and may reduce closure requirements. Drip pans used for secondary containment of wastes with free liquids will be cut up and incinerated. Drip pans that are cut up and treated by incineration onsite will be sold as scrap metal, provided that testing to verify the effectiveness of the decontamination procedure has been performed and the results accepted by the Executive Secretary of the Utah Solid and Hazardous Waste Committee.

5.0 Inventory Removal and Disposal [R315-8-7, R315-8-5; 40 CFR § 262 Subpart C, 264.112(b)(3)]

5.1 Wastes and/or residual wastes that remain following the completion of DCD hazardous waste management activities will be removed from permitted units and managed according to the applicable regulatory requirements and as described in Section 4.2 of this Attachment. Hazardous waste will be either transported to an offsite, permitted

TSDF for treatment and/or disposal or managed by an onsite unit, depending on waste characteristics and permit conditions.

5.2 Hazardous waste to be sent to an offsite TSDF for treatment or disposal will be prepared in accordance with the requirements of R315-8-5 for manifesting and transporting hazardous waste. A manifest will be prepared in compliance with the requirements of R315-6-2.20. The pre-transport requirements of 40 CFR Part 262 will be followed for packaging, labeling, marking, and placarding. The hazardous waste will be properly packaged in accordance with the Department of Transportation (DOT) regulations in 49 CFR Parts 173, 178, and 179.

6.0 Disposal or Decontamination of Equipment, Structures, and Soils [R315-8-7 40 CFR § 264.112(b)(4)]

6.1 DCD hazardous waste management unit structures and equipment will be decontaminated to a level that allows for safe disposal of wastes. This will be accomplished according to the steps described in Section 4.2 of this Attachment. Should it be determined at the time of closure that soil removal or remediation is required; the Closure Plan will be modified to address such issues.

6.2 If, after removing or decontaminating residual materials and making all reasonable efforts to effect removal or decontamination of contaminated components, sub-soils, structures, and equipment as required in R315-8-9.9, R315-8-12.6, 40 CFR § 264.603 and 264.112, DCD finds that not all contaminated sub-soils can be practicably removed or decontaminated, then DCD will close the facility and perform post-closure care in accordance with this attachment of the permit.

7.0 Closure of Disposal Units/Contingent Closure [R315-3-2.5(b)(3), R315-3-2.9(h), R315-3-2, R315-3-2.14(a)(2), R315-8-12.6(a),; 40 CFR § 270.14(b)(3), 270.18(h), 270.23(a)(2), 264.258(a), 264.601]- Not Applicable

8.0 Closure of Containers [R315-8-9.9]

8.1 As required by R315-8-9.9, all hazardous wastes and residual hazardous wastes must be removed from the containment system at closure. Removal of hazardous wastes and residual hazardous wastes will be performed according to the steps described in Section 5.0of this Attachment.

8.2 The remaining containers, liners, bases, and soils containing or contaminated with hazardous wastes or residual hazardous wastes must be decontaminated or removed. Decontamination or removal of the remaining containment system will be performed according to the steps described in Sections 4.2and 6.0 of this Attachment.

9.0 Closure of Tanks Systems [40 CFR § 270.14(b)(13)] - Not Applicable

10.0 Closure of Waste Piles [R315-8-12.6; 40 CFR § 264.258]

10.1 Closure of Building 4107 is expected to be final upon removal of the waste piles of discarded igloo doors and other equipment and decontamination of the building. Waste with free liquids is not permitted to be stored in the waste pile, precipitation and wind are prevented from contacting the waste by the structure of the building, as required in 40

CFR 264.250(c)(1) through (4), and no leachate is likely to be released from waste that is composed principally of steel and cement. Therefore, the waste pile is exempt from the requirements of 40 CFR § 264.251.

11.0 Closure of Surface Impoundments [R315-8-11.5; 40 CFR § 264.228]– Not Applicable

12.0 Closure of Incinerators [R315-8-15.8; 40 CFR § 264.351] – Not Applicable

13.0 Closure of Landfills [R315-8-14.5; 40 CFR § 270.21(e)] – Not Applicable

14.0 Closure of Land Treatment Facilities [R315-8-13.8; 40 CFR § 264.280] – Not Applicable

15.0 Closure of Miscellaneous Units [R315-3-2.14(a)(2), R315-8-16; 40 CFR § 264.601] – Not Applicable

16.0 Closure of Boilers and Industrial Furnaces [40 CFR § 266.102(a)(2)(vii)] - Not Applicable

17.0 Closure of Containment Buildings [R315-8-20; 40 CFR § 264.1102] – Not Applicable

18.0 Schedule for Closing [R315-8-7; 40 CFR § 264.112(b)(6), (d)(1), and (e)]

18.1 In general, commencement of final closure of the first of the container storage HWMUs described in this plan will follow the completion of the mission to destroy the stockpile of chemical munitions stored at DCD, as well as any secondary wastes that may require treatment onsite at DCD. Subsequent to the successful completion of the demilitarization activities, DCD will begin closure activities of its permitted storage facilities. In accordance with 40 CFR § 264.112(e), DCD personnel may begin removing hazardous wastes and decontaminating or dismantling equipment in accordance with this attachment at any time before notification of final closure. Permitted chemical storage igloos, buildings, and other facilities may be decontaminated as the demilitarization campaigns progress and the need for storage capacity decreases.

19.0 Time Allowed For Closure [R315-8-7; 40 CFR § 264.112(b)(6) and 264.113]

19.1 The schedule for closure includes, at minimum, the total time required to close each permitted hazardous waste management unit and the time required for intervening closure activities that will allow tracking of the progress of partial and final closure.

19.2 For all HWMUs, with the exception of the Building 4107 waste pile, DCD shall notify UDSHW in writing at least 45 days prior to the date on which final closure activities are expected to commence. Notification shall be given to UDSHW at least 60 days prior to commencement of final closure of the waste pile. The anticipated notification date is no later than 30 days after the date on which any DCD hazardous waste management unit receives the known final volume of hazardous waste.

19.3 No shipments of hazardous waste will be received at a specific DCD hazardous waste management unit after the first day of the unit-specific closure period. Within 90 days of receiving the final hazardous waste volume, all hazardous waste stored in the hazardous

waste management units undergoing closure will be treated onsite or shipped offsite for proper disposal. Partial and final closure activities will be completed within 180 days of receiving the final volume of hazardous waste. Residual materials identified in storage facilities will be sampled and analyzed within 30 days of the initiation of closure, and will be disposed of within 90 days.

20.0 Extensions for Closure Time [40 CFR § 264.113(c)]

20.1 If it is determined that activities associated with the removal of all hazardous waste will require more than 90 days, a request for an extension to complete this activity will be made at least 30 days before the initial 90-day time period expires. If partial and final closure activities cannot be completed within 180 days following receipt of the final hazardous waste volume, a request for an extension to complete the activities will be made at least 30 days before expiration of the initial 180 days.

21.0 Certification of Closure [R315-8-7; 40 CFR § 264.115]

21.1 Within 60 days of the closure of each HWMU, DCD will submit to the Executive Secretary of the UDSHW a certification signed by the Depot Commander and an independent registered professional engineer stating that the HWMU was closed in accordance with the facility's approved closure plan. The certifying engineer will be available to perform periodic inspections during partial and final closure activities.

22.0 Post-Closure & Cost Estimate

22.1 Post Closure Plan [R315-3-2.5(b)(13); 40 CFR § 264.118]

22.1.1 If DCD and UDSHW determine that post-closure care is required at any of the HWMUs, DCD will prepare a Post-Closure Plan that meets the applicable requirements.

22.2 Closure Cost Estimate [R315-309-1(2); 40 CFR § 270.14(b)(15), 264.142]

22.2.1 A closure cost estimate is not required for DCD hazardous waste management units because the federal government is exempted from the financial requirements of 40 CFR § 270.14(b)(15).

22.3 Notices Required for Disposal Facilities – Not Applicable

22.4 Financial Assurance Mechanism for Closure [R315-309-1(2); 40 CFR § 270.14(b)(15), 264.143, 264.151]

22.4.1 No financial assurance mechanism for the closure of DCD hazardous waste management units is required because the federal government is exempted from the financial requirements of 40 CFR § 270.14(b)(16).

22.5 Post-Closure Cost Estimate [40 CFR § 270.14(b)(16), 264.144]

22.5.1 Federal government facilities are exempted from the financial requirements of 40 CFR § 270.14(b)(16).

22.6 Financial Assurance Mechanism for Post-Closure Care [R315-309-1(2); 40 CFR § 270.14(b)(16), 264.145, 264.151]

22.6.1 Federal government facilities are exempted from the financial requirements of 40 CFR § 270.14(b)(16).

22.7 Liability Requirements [R315-309-1(2); 40 CFR § 270.14(b)(17), 264.147]

22.7.1 Federal government facilities are exempted from the financial requirements of 40 CFR § 270.14(b)(17).

22.8 State Financial Mechanism [R315-309-1(2); 40 CFR § 270.14(b)(18)]

22.8.1 Federal government facilities are exempted from the financial requirements of 40 CFR § 270.14(b)(18).